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ABSTRACT

An overview is given of the system of postsecondary education in Denmark, and the current stage of development of the system. Recent legislative decisions affecting system components is referred to throughout the descriptions. These areas are covered: admission and admission examinations (trends in numbers and percentages since 1960, with admission figures displayed by general field of study or segment of higher education); regulation of admissions; institutions and their components; governance structures (briefly outlined); traditional curriculum focusing on teacher education and engineering as examples; 1976 graduates by field, with projections for 1985 and 1990; percentages of employment in the public and private sectors for university graduates; and Danish terms and their definitions within higher education. A chart illustrates the structure of the entire state system of education. (MSE)

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FURTHER AND HIGHER EDUCATION
IN
DENMARK

Ministry of Education
Frederiksholms Kanal 21
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D E N M A R K

FURTHER AND HIGHER EDUCATION

1. Planning and development.

With its close connection to research, further and higher education is always bound to change in content and impact. In Denmark as in many other countries there has, however, been a growing public concern for further and higher education. Students completing upper secondary education and pressing to get a higher education have been growing in number. The costs of higher education have increased, but funds available for new appropriations are limited. Planning has become necessary.

During the last 25 years a number of committees have analyzed the problems of further and higher education and made recommendations. Since 1974 a more permanent administrative arrangement for planning and development has been established with a directorate for further and higher education with a national council and 6 national planning committees. To advise on research activities a planning council for research with 6 research committees assisted by a permanent secretariat has been established.

The aim of the Danish Conference of Rectors (Rektorkollegiet) is to encourage cooperation between universities and other institutions of higher education.

By legislation in the years 1970-1976 the administration of universities and specialized institutions for higher education has been reorganized. The students and the administrative-technical personnel have been given influence on the administration of each institution through their representation on boards and committees together with professors and other teaching and research staff.

By legislation in 1976 a coordinated national regulation of access to further and higher education was introduced.

In the following pages there is a short description of the present stage of development as regards admission, institutions, study programmes, input of students and output of candidates, employment, etc.

2. Rearrangements of examinations at lower secondary level.

The Act of 1958.

Under the Act of 1958 on the "Folkeskole" the so-called "realeksamen" was retained. A further development under that act was the introduction of the technical preparatory examination and the extended technical preparatory examination. These 3 examinations fulfilled entry requirements for a fairly large number of study programmes at that time.

The Act of 1975.

In 1976 when the 1975 Act on the "Folkeskole" became valid, the "realeksamen" and the two technical preparatory examinations were abolished. They were replaced as entry requirements to a number of further education study programmes by

a) the leaving examinations of the "Folkeskole" (after 9 or 10 years) or
b) the advanced leaving examinations of the "Folkeskole" (after 10 years).

After one of these examinations it is possible either to enter vocational education or to continue in higher secondary education.

3. Admission to institutions of higher education.

Admission to institutions of higher education has for some years, in principle, been open to all holders of

a) the upper secondary school leaving examination,
b) the higher preparatory examination or
c) the higher commercial examination.

Applicants without formal examinations can be admitted after a concrete assessment of their qualifications.

The upper secondary school leaving examination is in most cases obtained after three years at an upper secondary school (gymnasium). There exist other opportunities for preparation for this examination such as two-year courses. In the upper secondary school there are two lines in the first-year form (languages and mathematics). In the second- and third-year forms the languages line is divided into four branches: modern languages, music-languages, social studies-languages and classical languages. The mathematics line is divided into three branches: mathematics-physics, natural sciences-mathematics and social studies-mathematics.

Courses for higher preparatory examination were established in 1967. This examination was devised for persons who have done practical work for some years but want further education. It is a two-year course with a nucleus of common core subjects and a number of optional ones that can be freely combined. In order to complete the examination, the student must pass in all subjects from the common core, plus some of the optional subjects. The higher preparatory examination may also be taken subject by subject after preparation either at day or evening courses. A remarkable development in this connection is the establishment under an act of 19 May 1978 of preparatory courses in single subjects by the counties.

At commercial schools it is possible to take a one-year course for a commercial examination and a two-year course for the higher commercial examination, which is equivalent to the upper secondary school leaving examination but more vocationally slanted.

Since 1960 there has been a great increase in the number of young persons with such examinations, see table 1:

Table 1.

Total number of persons with upper secondary school leaving examination or higher preparatory examination.

1960	4,500	(5 per cent of a cohort)
1965	9,000	
1970	12,000	
1975	18,600	
1977	18,900	(25 per cent of a cohort).

The admission to further and higher education until 1977 with a few exeptions was open, and therefore the entry into further and higher education increased very much in that period, see table 2:

Table 2. Admission to further and higher education 1960-1977.

	1960	1965	1970	1975	1977*)	Index 1977 (1960=100)
University studies						
Natural sciences	350	720	1010	1890	1750	500
Social sciences	380	1240	1470	2430	2120	560
Humanities and theology	570	1930	3020	4070	2960	520
Medicine	470	1030	1100	1470	870	180
Specialized studies at various colleges/universities						
Technical University and Academy of Engineers	560	800	1080	1070	1020	180
Schools of architecture	70	170	550	450	520	740
Pharmacy, dentistry, veterinary medicine, agriculture, dairy, horticulture, forestry, food science	600	710	610	750	730	120
Business administration	160	320	580	860	940	590
Modern languages, correspondance and interpretation	300	480	450	1480	1530	510
Other studies						
Engineering Colleges (Teknika)	1620	870	1100	780	690	40
Teachers Colleges	2470	3220	3480	3600	3060	120
Other types of education	370	470	830	1260	1310	350
Total	7920	11960	15280	20110	17500	220

*) A system of general regulation of entry was introduced in 1977.

4. Regulation of admission.

There has been regulation of admission to many different educational programmes for a number of years due to limited capacity. Other types of education have had open admission, provided that applicants were able to meet the basic admission requirements. For example, admission to the schools of dentistry and midwifery has been restricted for decades while admission to the study of medicine was open. On the whole, admission to university studies has until recently been open.

By an act of 10 June 1976 the Minister of Education was authorized to regulate entry to further education under the

ministry. For study programmes under two other ministries similar arrangements were authorized. The new authorization was applied the same year to regulate entry to the study of medicine. The following year (1977) a general system of regulation of entry was introduced, applying to studies of long duration under the authority of the Ministry of Education, under the Ministry of Cultural Affairs (architecture and librarianship) and under the Ministry of the Interior (physical and occupational therapists). Criteria were defined for the selection among qualified applicants, if there were more applicants than study places. Maximum numbers of entrants - quotas - were fixed for each area of admission.

By fixing the quotas consideration is given to forecasts or estimates of the future needs for candidates, but also to the capacity at the institutions and to the geographical distribution of applicants and study places at institutions.

A coordinated procedure permits applicants to apply for admission to more than one institution or study programme and thereby increase their chance of being admitted.

The applications are screened to check whether the applicants fulfil the admission requirements. Admittance is granted to the institution/programme of study of highest priority on the individual's application if a place is available. No applicant is by the final allocation given more than one study place.

Study programmes of short duration are not included in this regulation system.

5. The institutions.

Universities.

For centuries Copenhagen University was the only university in the country. It was established in 1479.

In 1928 Aarhus University was established.

In 1964 Odense University was established.

Roskilde University Centre was established by an act in 1970 and began its functions in the autumn of 1972.

Aalborg University Centre began its functions in the autumn of 1974.

Copenhagen University has 5 main faculties:

- theology
- social sciences
- medicine
- humanities
- natural sciences.

Aarhus University has 5 faculties:

- humanities
- medicine
- social sciences
- theology
- natural sciences.

Odense University and University Centre has 3 main functional areas:

- humanities and social sciences, business, economics and business languages
- natural sciences
- medicine and the study of physical education.

Roskilde University Centre is organized in 3 main functional areas:

- natural sciences
- humanities
- social sciences.

Upon the establishment of Aalborg University Centre the following already existing types of studies and institutions were incorporated in the centre:

- The school of social work, Aalborg
- The general study of business economics (the so-called H.A. study) at the branch of the school of economics and business administration
- The specialized studies of business economics (the so-called H.D. study)
- The Aalborg branch of Denmarks Engineering Academy
- The Teknikum, Aalborg.

In addition the study for land surveying has been moved to Aalborg. Previously it was located at The Royal Veterinary Medicine and Agriculture University, Copenhagen

The universities and the university centres all come under the Ministry of Education.

S p e c i a l i z e d i n s t i t u t i o n s .

Under the Ministry of Education the following specialized institutions are found:

- Denmark's Technical University, Lyngby, (founded 1829)
- Denmark's Engineering Academy, *) Lyngby, (founded 1957)
- The Dental College, Copenhagen, (founded 1888)
- The Dental College, Aarhus, (founded 1958)
- The Royal Veterinary and Agricultural University, Copenhagen, (founded 1856)
- Royal Danish School of Pharmacy, Copenhagen, (founded 1892)
- The Copenhagen School of Economics and Business Administration (founded 1917)
- The Aarhus School of Economics, Business Administration and Modern Languages (founded 1939)
- Branches of Schools of Economics and Business Administration in Esbjerg, Herning, Kolding, Sønderborg, Varde and Aalborg. *)
- The Royal Danish School of Educational Studies, Copenhagen (founded 1856) and its branches in Esbjerg, Haderslev, Odense, Skive, Vordingborg, Aalborg and Aarhus.
- 59 Colleges of Education *) (education of teachers for primary and lower secondary education, for kindergarten teachers, leisure-time youth leaders and home economics teachers)
- 8 Colleges of Engineering, Teknika, in Copenhagen, Aarhus, Odense, Helsingør, Haslev, Horsens, Esbjerg and Sønderborg. *)

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*) these institutions do not carry out research, but utilize research results from institutions of higher education.

Under the Ministry of Cultural Affairs the following specialized institutions are found:

- The Royal Academy of Fine Arts, Copenhagen, (founded 1754) with its 3 independent school departments:
  - The School for Architecture
  - The School for Visual Arts and Sculpture
  - The School for Conservators
- The School of Architecture, Aarhus, (founded 1965)
- The Royal Danish Academy of Music, Copenhagen, (founded 1867)
- The Jutland Academy of Music, Aarhus, (founded 1927)
- The West Jutland Academy of Music, Esbjerg, (founded 1946)
- The Funen Academy of Music, Odense, (founded 1929)
- The Northern Jutland Academy of Music, Aalborg, (founded 1929)

Under the Ministry of the Interior:

- Schools for physical therapy and occupational therapy.

6. The administration of the institutions for further education.

In June 1970 an act on the administration of the universities was passed. By an act of 30 May 1973 it was amended to cover both the universities and the specialized institutions. It is not applicable for the institutions under the Ministry for Cultural Affairs or the Ministry of the Interior. The Act was revised in 1976.

In the Act on Administration of Institutions for Further Education it is stated, that these institutions shall aim at research as well as education up to the highest level within the main functional areas, which by the Minister of Education is entrusted to each institution.

The Minister of Education makes the regulations for:

- access to studies
- the study programmes
- the obtaining of the degrees of licentiate and doctor
- the employment of teachers and research staff
- relegation of students.

Every institution is administered by a Rector in connection with a certain number of collegial boards and committees. The precise rules are fixed in the statutes, which must be authorized by the Minister of Education.

The Rector represents the institution externally and is responsible for the daily supervision of the administration of the institution. It is his responsibility that matters, which a collegial board or committee shall decide or voice its opinion upon, are laid before the board or committee.

The Vice-Rector is substitute for the Rector and assists the Rector in his tasks.

Assisting the Rector is an administration, which is placed under a chief-administrator, who must have had education and training in the field of administration.

The Konsistorium is the supreme governing body of the university. In addition to the konsistorium there is a council for research and studies for each of the various main functional areas within the institution. A main functional area may be subdivided in two or more subject groups, each governed

by a council, which takes over parts of the functions, which normally are within the jurisdiction of the council for research and studies.

The research activity within each functional area normally takes place within institutes. For each institute there will be a committee, which decides on the distribution of the tasks of the institute.

For every main functional area a central staff-student study committee is established. Such committees may also be set up for groups of disciplines, individual disciplines, lines or parts of a subject.

In the collegial boards or committees there are representatives of the teaching staff, the students and the technical-administrative personnel.

7. The study programmes.

In most cases the study programmes resemble common continental European study programmes. The periods of study are generally rather long. Most of them are stipulated to 5-6 years.

An arrangement similar to the bachelor's degree is not found at the universities, but only at various colleges.

Since lack of space makes a description of all study programmes impossible, the following two fields have been chosen to give an idea of the contents and organisation of further and higher education:

teacher education and training,
engineering.

Teacher Education and Training.

Teachers in the primary and lower secondary school are normally educated at a state or private college of education. The period of training is 3½-4 years. The qualification for admission is upper secondary school leaving examination, the higher preparatory examination, the higher commercial examination or equivalent knowledge. The content of the training is fixed by the Ministry of Education and comprises general school subjects, educational and psycholcgical subjects and some practical subjects. The educational programme is chiefly theoretical but alternates with periods of practical teaching.

The education and training is concluded with an examination which is common to all the colleges.

Advanced teacher training for teachers in the primary and lower secondary schools is given at the Royal Danish School of Educational Studies (Danmarks Lærerhøjskole) or at its branches. Both short courses and longer graduate courses are provided.

Other specialized forms of teacher training are provided at the Physical Education Teachers' College (Danmarks Højskole for Legemsøvelser), colleges for woodcraft teachers and colleges of education in home economics. Teachers in technical and commercial schools are trained at special pedagogical training courses for vocational teachers (Erhvervspædagogisk Læreruddannelse).

The education of teachers for general upper secondary education takes place at universities or university-centres. These teachers must enter a post-graduate course in pedagogics lasting ½ year. It includes practice teaching at an upper secondary school and a concurrent theoretical course comprising general education, didactics, educational psychology and school hygiene.

Kindergarten and youth centre teachers are trained at kindergarten or youth centre training colleges. The training here lasts three years and is both theoretical and practical, with strong emphasis on educational and psychological subjects.

E n g i n e e r i n g .

Engineers are educated at technical colleges, the so-called "teknika", (technical engineers); the Danish Academy of Engineers (Danmarks Ingeniørakademi) (academy engineers); the Technical University of Denmark (Danmarks Tekniske Højskole) (civil engineers); and the Aalborg University Centre (academy and civil engineers).

The admission requirements are the same at all: the upper secondary school leaving examination with mathematics-science or the higher preparatory examination with mathematics and physics, or the technical colleges' special entrance examination. For admission to a technical college some previous practical training is also required.

The education of technical engineers takes three years and there is a choice of five branches: Building techniques; electrotechnology; engineering technology; marine technology; and production technology. Each branch is subdivided in turn.

The education of academy engineers takes 3½ years. There are four branches: Chemistry; electricity; building; and mechanical engineering. There is a possibility of further specialization within each branch. The study includes six months' practical training.

The standard civil engineers education takes five years. Each student's course of study consists of a number of module courses. Completion of each of these gives a number of points. The requirement for graduation is 330 points.

B. Output of candidates.

The university studies are calculated to last between 4 and 7 years.

The course of study at the various other institutions of higher education will in most cases take 3-5 years.

Therefore there is a time-lag of 4 to 8 years between an increased intake into higher education and the increased output of candidates.

Table 3. Total accumulated number of candidates with further and higher education.

	Factual	Forecasts*)	
	1976	1985	1990
Candidates from universities			
Legal professions	9500	13200	14200
Economic professions	2500	4000	4900
Other social science professions	500	3000	5500
Humanities	5700	14800	20000
Theologists	2000	2200	2400
Natural scientists	4000	8000	11300
Psychologists	1100	1800	3000
Medical professions	11500	17200	19200
Candidates from specialized colleges/universities			
Engineers	37400	49200	56600
Architects	3000	5000	5800
Veterinary medicine, agriculture, dairy, horticulture, food science candidates	7000	8100	9100
Dentists	4700	6100	6800
Pharmacists	2900	3300	3500
Business administrators	4400	9400	12800
Correspondents, interpreters	5600	16800	24000
Candidates from other institutions			
Teachers for primary and lower secondary schools	60500	80700	89100
Teachers for home economics	3200	3300	3200
Social workers/advisers	3600	7100	9000
Librarians	3100	5500	6800
Journalists	3000	3400	4200
Therapists	5700	7400	8200
Mid-wives	1000	1100	1400
Total	181900	270600	321000

*) The forecasts for 1985 and 1990 are based upon the number of students, already admitted in the institutions and upon the planned numbers admitted in 1977. These numbers are in the calculations repeated in the following years.

9. Employment.

The candidates with further and higher education find employment in many jobs and professions. They also move from one sector to another. There is a great variation according to types of education. An estimate of the distribution in the public sector and the private sector is made in table 4. Persons in liberal professions, such as lawyers and architects, are included in the column for the private sector.

Table 4.

Type of candidate	Public sector	Private sector
	per cent	per cent
Legal professions	60	40
Economic professions	75	25
Humanities	99	1
Natural science professions	97	3
Psychologists	93	7
Medical professions	65	35
Engineers	38	62
Architects	31	69
Business administration professions	20	80

10. Glossary.

Candidate

See kandidat.

Doctorate

See doktorgrad.

Doktorgrad - Doctor's degree

The highest degree within higher education, granted after a number of years' of independent research to candidates upon submission of a thesis, which undergoes a careful evaluation. It is awarded only to a very limited numbers of candidates.

Entrance examination

See højere forberedelseseksamen and studentereksamen.

Folkeskole

The primary and lower secondary school. Under the Act of 1958 it consisted of 7 years primary education followed by either 8th, 9th and 10th forms of lower secondary education or the special department leading to "Realeksamen" in 3 years. Under the present Act of 1975 the special department leading to "Realeksamen" has been abolished: Now the "Folkeskole" consists of 9 or 10 forms and a non-compulsory pre-school class.

Folkeskolens afgangsprøver

The Leaving Examination of the Folkeskole may be taken in one or more or all of 11 subjects: Danish, Aritmetic/Mathematics, English, Physics/Chemistry, German, Latin, French, Needlework, Woodwork, Home Economics, Typing.

Folkeskolens udvidede afgangsprøver

The Advanced Leaving Examination of the Folkeskole may be taken after 10th form in one or more or all of 5 subjects: Danish, Aritmetic/Mathematics, English, Physics/Chemistry, German. In the four last mentioned subjects it is a condition that the pupil has followed the advanced course in the 10th form.

Højere forberedelseseksamen - Higher preparatory examination

Entrance examination for universities and institutions of further and higher education, taken after two years of preparatory studies.

Kandidat or candidatus

First degree in higher education, granted after 4½ to 8 years' study. The length of studies depends on the ability of students and the time they devote to them. When ready, students arrange with the administration of their institution to sit for the final examination. Some faculties (e.g. science) lay down a detailed syllabus. In some study programmes students must take an examination at the end of the first phase of study. This degree is often the preparation for teaching at the upper secondary or university level.

Licentiat or licentiatus

Degree of higher education, granted to candidates after two to three years of supervised post-graduate research work.

Magister

Degree of higher education, granted after a minimum of five years' study which generally prepares students for research. The final examination for the magister degree is called the magisterkonferens.

Master's degree

See magister and kandidat.

Professional qualification

Qualification granted after studies in institutions of 'intermediate' or 'higher' level. This qualification may bear the name of the profession it entitles its holder to practice (e.g. teknikumingeniør, civilingeniør) or that of the final examination (e.g. in commercial studies: handelsvidenskabelig diplomprøve, or HD).

Realeksamen

Under the "Folkeskole" Act of 1958, the Realeksamen was retained but is has now after the Act of 1975 ceased to exist. It was a school-leaving examination, taken after three years of lower-secondary education (realskole) following seven years of primary education.

Studentereksamen

Upper secondary school leaving certificate, obtained after 9-10 years of primary and lower secondary education followed by three years of upper secondary education which is the same throughout the country. In principle, the "studentereksamen" gives access to higher education.

FURTHER AND HIGHER EDUCATION
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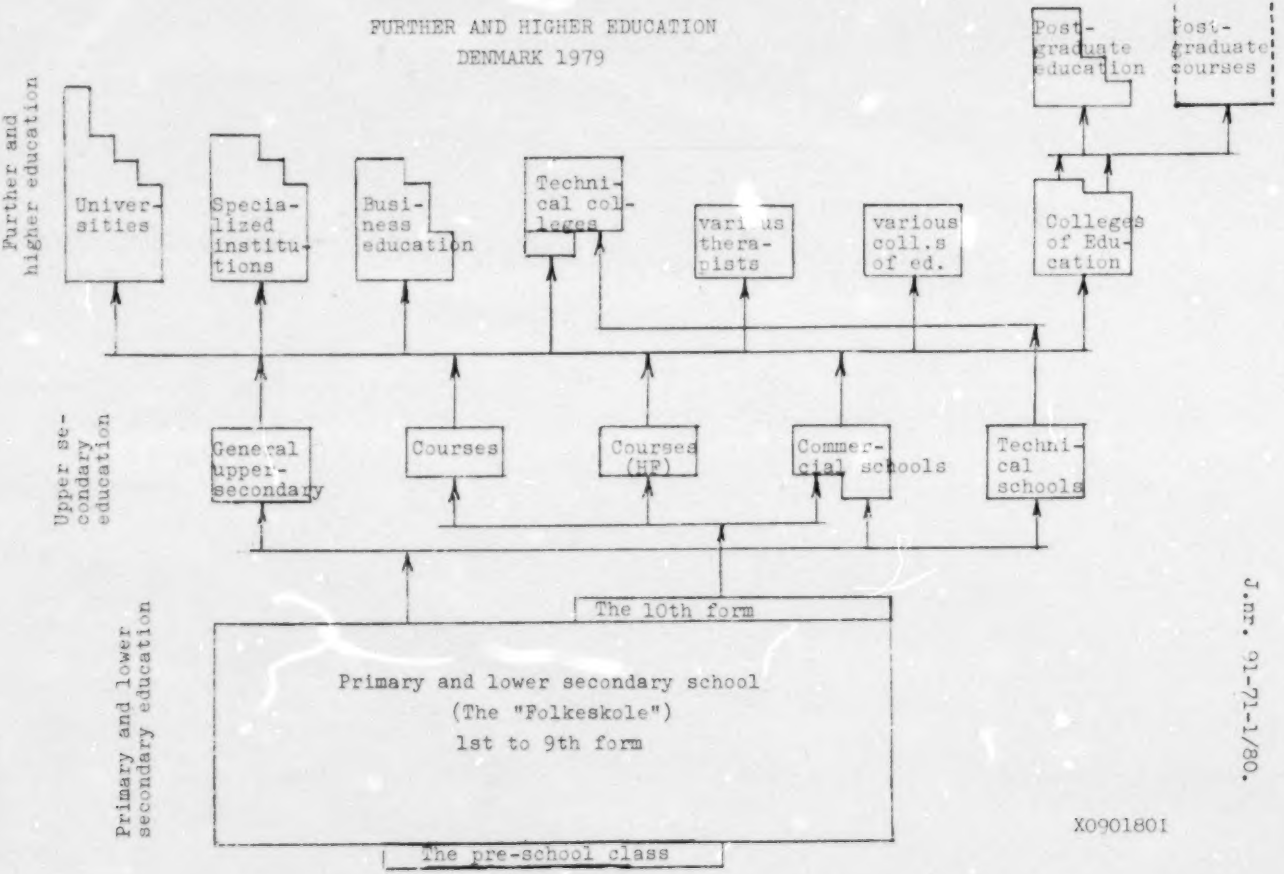

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